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AMERICAN INSTITUTE OF CONSULTING ENGINEERS

PROCEEDINGS OF THE ANNUAL MEETING

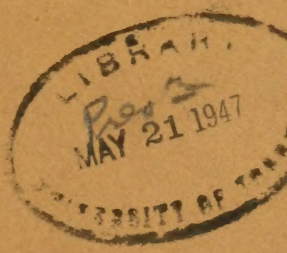
January 13, 1947

AND

ADDRESS OF GUEST SPEAKER

MR. JOHN M. HANCOCK

Member, United States Delegation
United Nations Atomic Energy Commission



ON

THE UNITED STATES PLAN FOR ATOMIC ENERGY CONTROL

WITH DISCUSSIONS

OFFICE OF THE SECRETARY
75 WEST STREET
NEW YORK 6, N. Y.

AMERICAN INSTITUTE OF CONSULTING ENGINEERS

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The Institute is not responsible for any statement made or opinion expressed in its publications

ANNUAL MEETING

of the

American Institute of Consulting Engineers

The Thirty-fourth Annual Meeting of the American Institute of Consulting Engineers, preceded by a dinner at 7 o'clock, was held Monday, January 13, 1947, at 8.35 o'clock at the University Club, 1 West 54th Street, New York City, Mr. Enoch R. Needles, President of the Institute, presiding.

The following members were present:

O. H. Ammann
Edward H. Anson
R. E. Bakenhus
R. N. Bergendoff
Clinton L. Bogert
Charles B. Burdick
George V. T. Burgess
George W. Burpee
George C. Diehl
C. H. Dolan, II
Clarence W. Dunham
Malcolm Elliott
Charles A. Emerson
Carroll A. Farwell
Ernest P. Goodrich
Shortridge Hardesty
Clinton D. Hanover, Jr.
Frederic R. Harris
Philip W. Henry
W. W. Horner
Ernest E. Howard
Irving V. A. Huie
John P. Hubbell
Dugald C. Jackson
Ernest C. Johnson
Theodore T. Knappen
William H. Mueser
David Moffat Myers
E. R. Needles
Lawrence E. Peterson
William M. Piatt
Malcolm Pirnie
J. H. Porter
Carlton S. Proctor
Henry E. Riggs
Ralph R. Rumery
Thorndike Saville
F. W. Scheidenhelm
Elwyn E. Seelye
Albert V. Sielke
Ole Singstad
C. G. Spencer
Carl H. Stengel
John C. Stevens
L. J. Sverdrup
Adolph G. Syska
Henry C. Tammen
R. H. Tatlow, III
Elmer K. Timby
Howard M. Turner
Arthur S. Tuttle
Edwin F. Wendt
Harold E. Wessman
Ezra B. Whitman
Charles S. Whitney

There were also present the following guests:

Robert W. Abbett
Werner Ammann
William H. Bokum
Leland M. Bonnet
W. G. Bowman
Milton Brumer
Charles W. Bryan
Charles W. Burke
James L. Carey
William N. Carey
W. A. Chapin
John L. Christie
E. J. Clark
Harold V. Coes
C. E. Davies
Herbert Davidson
F. de Schauensee
John C. Evans
George L. Freeman
Raleigh W. Gamble
J. M. Garrelts
W. R. Glidden
Herbert Goodkind
Morris Goodkind
R. H. Gould
C. L. Hall
Elliot Haller
John M. Hancock
Clinton D. Hanover, Sr.
Egbert Hardesty
Alfred Hedefine
J. F. Hennessey
W. F. Holstein
S. C. Hollister
H. H. Henline
Asa B. Kellogg
Miles C. Kennedy
O. H. Koch
Fred Lavis
E. J. McGrew, Jr.
Robie Mitchell
Nicholas M. Molnar
A. B. Newman
John I. Parcel
E. E. Paul
Donald A. Quarles
George Satthoff
Homer R. Seely
S. M. Shapiro
Alan L. Sielke
David B. Sloan
George Smith
Harry Taylor
Harry F. Thomson
Frank C. Tolles
J. L. L. Tripp
Stephen L. Tyler
D. J. Walsh, Jr.
James S. Whitney
Sydney Wilmot
Kenneth B. Wolfskill

President Needles: Gentlemen: The Annual Meeting of the American Institute of Consulting Engineers will now come to order. We will endeavor to expedite our formal business activities.

The order of business calls for a roll call, but in view of the fact that the Secretary has the complete list of names of all the members and their guests who are here, we will dispense with that.

It is a great pleasure to introduce to you, and call your attention to, those guests who have honored us with their presence this evening at the speakers' table.

At my extreme right I wish to introduce Mr. Charles W. Burke, President of the New York State Society of Professional Engineers. (Applause.)

Next, is Mr. A. B. Newman, Vice-President of the American Institute of Chemical Engineers. (Applause.)

Mr. D. J. Walsh, Jr., President of the Association of Consulting Management Engineers. (Applause.)

And next, our good friend and fellow member who is retiring as President of the American Society of Civil Engineers, Mr. W. W. Horner. (Applause.)

Mr. John L. Christie, Vice-President of the American Institute of Mining and Metallurgical Engineers. (Applause.)

Mr. Nicholas M. Molnar, President of the Association of Consulting Chemists and Chemical Engineers. (Applause.)

And Mr. Donald A. Quarles, Director of the American Institute of Electrical Engineers. I don't want to favor Mr. Quarles above the others whom I have introduced because I know that they are all distinguished gentlemen in other ways than indicated by the official titles that I have given them this evening; but our good member, Clinton Bogert, has given me a note saying that Mr. Quarles also is the Mayor of Englewood, New Jersey, and is also Chairman of the Bergen-Hackensack Sanitary Sewer District Authority. (Applause.)

My comments on the "State of The Union" are very brief, and will simply call to your attention the fact that our membership at the present time totals 133. We have had 8 new members come to us during the past year, and unfortunately we have lost 3 by death and 1 by resignation. Our net gain for the year is 4. I might say that there are some 3 or 4 other new members who will become officially so in the next few days, probably, and we have quite a number of others who have their applications before us. But the official status as of today is 133 members.

We have indulged in a little voting recently as the members may recall and it is necessary as a part of our official conduct of this meeting that we have the Report of the Tellers on ballots for Council members, and also on ballots for amendments to the constitution and to the by-laws.

The member to report for the Tellers is Admiral Harris, and I call on Admiral Harris to give us that report.

Admiral F. R. Harris: Mr. Chairman, the vote for members of the Council:

Walter W. Colpitts	97
Ernest C. Johnson	96
Ezra B. Whitman	97
Elmer K. Timby	97

These are the names proposed by the Nominating Committee, and no other names were substituted.

Amendment to the Constitution:

In favor	95
Against	0

Amendment to the By-laws:

In favor	87
Against	7

PRESIDENT NEEDLES: Mr. Secretary, is a motion necessary to put into effect the Report of the Tellers?

SECRETARY HENRY: Just the declaration of the President that the votes have been announced is sufficient.

PRESIDENT NEEDELS: The President therefore announces that the result of the ballots is sufficient to determine the action pertaining to each of those matters.

In my official position as President of the Institute, I am permitted this privilege of telling you how deeply I have felt the honor of serving you during the past year. No finer experience has ever been my part heretofore. Publicly, I wish to witness the fine support given by our Council during the past year; the continued and devoted service of our Secretary, Mr. Henry, which is truly "beyond price"; the grand support of our unusual committee chairmen; your fine attendance and interest at our monthly luncheon meetings; and the demonstrated deep and watchful concern for the welfare of our Institute which appeared in the great flood of considered replies which came in from virtually all of you in response to our questionnaire last spring. These bespeak a strong healthy group which must always show progress.

Quite recently I was approached by a very distinguished graduate civil engineer who had many very remarkable achievements to his credit, who had served his country and his fellowmen for many years in a notable and distinctive manner which had brought high honor to him, and who was now entering upon a private engagement which would require his departure from the United States as the chairman of a board of engineers to undertake a most important study for a foreign government.

This gentleman asked me a very simple but a highly fundamental question. He was not a member of our American Institute of Consulting Engineers. His previous engineering experience had not been attained as a private citizen. He was now complying with a request for his personal services in a private capacity and

as a specially qualified engineer, with his personal compensation to be measured primarily by his personal service. He asked me very bluntly: "Is it proper that I should call myself a consulting engineer? Is there any legal restriction upon my use of that designation? Do I have to be a member of your Institute in order to be privileged to use the name of 'consulting engineer'?"

I think I made the same reply that any one of you would have given. In substance, I told this distinguished gentleman and engineer that he was a consulting engineer if he chose to so designate himself. There was no prescribed routine by which this title could be bestowed upon him by others. Of course, an engineering degree would help round out a reasonable picture of what a consulting engineer should be, and certainly maturity in engineering experience would be helpful. A license to practice engineering in at least one state would be a definite asset to one proposing to use the designation. But as between engineers, I expressed the view that the decision to be known as a "consulting engineer" was one for this individual himself and alone.

I believed then, and I believe now, that my answer was basically correct as to how one becomes a consulting engineer. But some questions were started in my mind. Is it right that the individual should be privileged to designate himself a consulting engineer? Is it necessary for us to say, "There ought to be a law?" Is the term "consulting engineer" cheapened or subject to abuse by the fact that it is self-imposed?

A consulting engineer is an engineer who consults, advises or devises. Reference to the dictionary will support this definition. The constitution of our Institute requires that its members shall be members of our so-called Founder engineering societies. Clearly a consulting engineer by common acceptance and test must first be a qualified engineer.

When an engineer elects to be known as a consulting engineer, he assumes responsibilities and a position among men and among his fellow engineers which cannot be treated lightly. He is "on the spot." He is out in front, and virtually in a position of trust, where ability and integrity are fundamental. This position calls for performance or elimination. There is little room for failure. The self-designated consulting engineer knowingly places himself where he will be severely tested and severely judged by his clients and by his associates. Such a position is not one to be elected or even desired by a base pretender or by an incompetent. If such a position should be claimed improperly or inadvisedly retribution would be swift and failure complete, for nothing reflects so devastatingly upon the giver or so embitters the recipient as bad or even poor advice.

Considering all factors, my mind became quite clear that the consulting engineer should be self-designated. Knowing his own strength and limitations, having confidence in himself, and understanding the severity with which his service will be judged, the individual himself may well be the first to declare, "I have become a consulting engineer."

May our people always be spared the impostion on them of legally designated consultants who have only laws or rules or regulations to support them in the use of such designation. Rather than being cheapened or weakened by the fact that it is self-imposed, I believe that the term "consulting engineer" is strengthened, justified, and even glorified by the fact that it is self-elected. One who is to minister to his fellow men must first say for himself that his greatest happiness will come in service and devotion to others.

For thirty-six years the American Institute of Consulting Engineers has remained an organization of relatively small numbers, but of highest ideals. Its members have been tied together not only by a common designation, but by common purposes, services and trials. Probably our greatest strength lies in our firm-founded respect, each for the other. As stated by the founders, our purpose is to serve our profession in "the promotion of ethical standards and practical efficiency" and "to increase the usefulness of the profession to the public." In addition, we think in terms of common interest and advancement, and such meetings as this permit us to know each other better.

We do not aspire, nor could it be possible for us, to replace, duplicate, or harm the work or position of the fine technical and professional organizations of which all of us are also members. We do hope and endeavor to encourage, strengthen and support the work of those societies in their advancement of our engineering profession. We want the fellowship and counsel of all consultants who see eye-to-eye with us in our announced ideals, but least of all do we seek a mere increase in numbers. We want membership in our Institute to represent the hall-mark of accomplishment and fullest attainment in our self-chosen and self-designated place.

Who are our members and what is their attitude toward the engineering profession? We now have one hundred and thirty-three members throughout the nation, and though our number is and has always been small, our present membership has provided eight presidents of the American Society of Civil Engineers. In past years it appears that our Institute has contributed seven presidents of the American Institute of Electrical Engineers, two presidents of the American Society of Mechanical Engineers, and

two presidents of the American Institute of Mining and Metallurgical Engineers. One of our members took a most prominent part in the creation of Engineers Joint Council, and two of our members are now serving with that small but important and most promising group. We take great pride in the professional activity of all of our members. The breadth of our activity may be visualized in the fact that thirty of our present members have been honored by official positions in the American Society of Civil Engineers, eighteen as Directors, four as Vice-Presidents, and eight as President.

Our Institute does not lack in its contributions to the engineering profession.

Sincere self-evaluation is neither presumptuous nor unbecoming. Performance is not vanity.

Thank you. (Applause.)

We are unusually favored and honored this evening by our guest speaker. I must confess that when the approach was made to Mr. Hancock to appear before us this evening it was done in a rather cold way.

We had a very fine suggestion to us from General McNaughton of the Canadian Military Forces, who spoke at our luncheon meeting a couple of months ago, that Mr. Hancock would be a very fine and able and distinctive speaker — if we could get him. We had a few common friends such as General Tom Farrell who is working on the Atomic Energy Commission with Mr. Hancock; but I was a little fearful that Mr. Hancock might feel a little strange this evening, and find himself speaking to those he didn't know too well. But I discovered that just before he arrived he met his fellow-townsman, Carlton Proctor, in the Union League Barber Shop and came up with him.

He got here, and here was Malcolm Pirnie and Fred Lavis, who seemed to have something in common with him out in a community north of the city where a little politics are indulged in once in a while along with their engineering work.

And then, lo and behold; I knew that Mr. Hancock had been in the Navy a number of years ago, but here I discovered he was an old, old friend of Admiral Bakenhus and Admiral Harris. He is a very close friend of Mr. Coes here, and many of you seem to be his very close and old friends; so that there is little I can tell you about Mr. Hancock. In fact, anything that I could say would be simply a repetition of what you have seen so frequently in the daily press as to his activities on the United Nations Commission for Atomic Energy Control.

I became very apprehensive last week that with Mr. Baruch leaving the Atomic Energy Commission and going down to South

Carolina to indulge his pleasure in the sunshine and the fine country down there, Mr. Hancock might decide to spend the rest of the winter down there also because here he was in a large picture in the daily press — Mr. Baruch and Mr. Hancock together — and Mr. Baruch was telling how he was through with public life and that sort of thing, and Mr. Hancock looked as if he expected to stay down there quite some time, too. But not having heard anything to the contrary, I hoped that he would return.

I called his secretary at noon today to see if he actually was back, and if he was in voice or if he had a cold or something like that, and she assured me that he was back and on the job and would be with us tonight; and I can assure you that we are very, very deeply honored to have Mr. Hancock appear before us and speak, as he can in such an authoritative way, about the United States plan for atomic energy control. Mr. John M. Hancock! (Applause.)

MR. JOHN M. HANCOCK: Thank you, Mr. Chairman. Gentlemen: I will have to tell you a little bit of history before I embark on this talk. This is not a prepared talk, though I will plan to follow some topical notes. And the bit of history is this:

Some years ago in this country we had the idea that we might get quickly toward world peace by reducing the size of our Navy. There was a disarmament conference in Washington, and one of the British delegates was Lord Riddle, who was much in demand for public speaking. One Sunday morning Lord Riddle found himself leaving Washington in a very comfortable club car on a train and there were spread out about him the morning papers. Upon looking at one of the papers he was very surprised and pleased to find his picture in the rotogravure section.

And it was while in the midst of the glow created by seeing his picture in the paper that the conductor came along and asked for tickets. Lord Riddle began going through his pockets, but he couldn't seem to find his ticket.

"You're Lord Riddle, aren't you?" said the conductor.

"Yes, how did you know?" replied Lord Riddle.

The conductor said, "I saw your picture in the paper today, didn't I?"

Lord Riddle agreed that he had, and then told the conductor he was very sorry, but he couldn't seem to find his ticket. And the conductor said, "Well, as long as you're Lord Riddle, it's okay with me if you haven't got a ticket."

"It may be all right with you," replied Lord Riddle, "but I am in a hell of a fix — if I haven't my ticket, I don't know where I am going." (Laughter.)

So I at least have a ticket here — my list of topics.

I am going to try a difficult job I know, because this problem of atomic energy has so many ramifications that there is always a grave danger of getting to the wrong destination. The best way to tackle the job is to sketch the plan very briefly as I see it. I will try to make it as simple as a village ordinance for you and then, when that is done, if you feel interested in any particular phase of what I have discussed I will be glad to have your questions.

I may have to call a turn on some matters, conceivably, regarding future operations. I can't say what Mr. Austin is going to do, although I think I know what he is going to do. But as far as history is concerned, and outside of some national security secrets which you wouldn't want me to reveal and which I have probably forgotten about anyway, I will feel perfectly free to tell you frankly what I know. And if I don't know the answer, I will not try to evade the question but will tell you I do not know.

Getting back to the start of the atomic energy problem, the most impressive scientific facts I heard — and I think I have heard them all — are just two. One is that if you had the hard cores of the atoms of uranium piled up in an after-dinner coffee spoon, with nothing but that — just the hard cores of the atoms — you'd have the weight of 10,000,000 tons — greater than your steel production this year. It seems inconceivable to a layman.

The other is that the cohesive force in an atom might be represented by a cable strong enough to hold up the United States Navy.

That is the kind of force you are playing with. You men who know a lot about this may find other measurments better than the way I expressed them, but these facts seem to be important if one is to recognize the character of the problem we are dealing with. These figures make even New Deal financial figures seem small.

Now to get back to the start of this operation.

There were three broad choices open to this country at the time it proposed its plan of approach. First, of course, would be the obvious one to retain this bomb as a monopoly. I don't know about engineers, but I know some scientists talk freely, so we probably couldn't retain it as a secret if we wanted to. We'd lose the monopoly in — say five, eight, ten, or fifteen years — after developing the first use. The attempt to keep the secret would only delay any nation which would wish to develop it for itself. That seemed a temporary hope, one not worth pursuing.

Next choice — world government. Well, that seemed impractical at this time, too remote, too difficult.

And the third choice was what we have come to call the American Plan. Now, what is it in reality? It is just a little pie

slice, if you will, a little segment of world government dealing with atomic energy alone.

So, my three choices were monopoly, which wouldn't last; a world state, which seemed too impractical of attainment; and the third, a little slice of a world government aimed at being self-contained and limited to atomic energy. And it might become, if it worked, a foundation for a broader government in world affairs. That probably wasn't part of the thinking, but that is the obvious inference from the adoption of it.

With that consideration, the three heads of government of this country, Britain and Canada, met in November a year ago, outlined a plan which was ratified by the Ministers — Byrnes for the U. S., Molotov for the Soviets, and Attlee for the United Kingdom — which was in turn carried forward by the United Nations in an Act by the United Nations Assembly back in January, 1946.

I show you this original document, the Act of the Assembly, not to impress you that they have "pink" tendencies out there, because this is really orange. But this document of a year ago has stood up remarkably well. I could say honestly that if I were writing it today, with full power, I wouldn't change a word.

Now, I'd like to pick a few clauses out for you. I am not trying to omit any point here, but it is too long to read in complete detail.

Let's look at the job assigned to the Atomic Energy Commission of the United Nations.

First, this Commission has to make recommendations and make specific proposals. Now, they didn't say to outline merely a treaty in the old tradition, the kind the world has lived with before — but rather they said it should make specific proposals. Now, to what purpose?

The first one was a public welfare purpose — "the exchange of basic scientific information for peaceful ends." The next one is a model for an engineering report — "for control of atomic energy to the extent necessary to ensure its use only for peaceful purposes." Now, if you want to try a job of recasting that in fewer words, I suggest you try it. Let me read it again: "for control of atomic energy to the extent necessary to ensure its use only for peaceful purposes." Every word carries its own emphasis.

Next, "for the elimination from national armaments of atomic weapons and all other major weapons adaptable to mass destruction." And here is the part I want you to note: "for effective safeguards by way of inspection and other means to protect complying states against the hazards of violation and evasion."

That is the charter, the marching orders given to this Commission. I think it is safe to say that the document has stood up.

Our plan is based wholly on it. The plan contains nothing outside of the orders, and we have faced no attack yet that seems to have gathered momentum.

Now, the difficulties, of course, are clear enough — they are rather obvious. Every nation hesitates to rely on a treaty when the world has had 3,000-odd treaties land in the dustbins of history — and not a single treaty for limitation of arms has ever worked — not one, not once.

The answer will be quickly made that we have a treaty outlawing the use of poison gas. When taxed with that argument I said that in the first place poison gas has been used; and next, that we did not use it and we did not sign the treaty. So apparently, not signing a treaty is as effective as signing a treaty. But there has never been a treaty outlawing the use of a weapon that has stood up.

An illustration — among several available — that impresses me most was that in earlier days there was an attempt to outlaw the crossbow, and it was so much frowned upon then by the world that the Pope interdicted its use. And not being a Catholic I can't fully interpret that act, but I think that a violation provides a through ticket to hell without a return stub. But in spite of that, the crossbow was used.

The Russian plan is that the nations exchange promises never to produce or use an atomic bomb. And yet the Russians say theirs is a practical plan. I say a plan of a kind that has never succeeded in history is not a practical plan. And that is where the first joining of the issues came.

The truly significant part to my mind is that those nations that have opposed our plan have been willing to take our word on it, if we would agree not to make and not to use a bomb — they don't want any proof of that, our word is good. And they say, "But why do you, if we take your word — why do you refuse to take our word?" And the answer is — the answer that has been made to that — in varying forms and over long periods of months.

Let's look back at Versailles. We may think that Germany had her tongue in her cheek when she signed the treaty, but we know that Italy and Japan did not, and we know that in a few years — fifteen or thereabouts — those governments underwent changes and the treaties underwent changes as the governments changed, and the treaty made at the end of the last war was alive for about fifteen years. And I said, "This atomic energy treaty is the kind of a treaty to be kept; not one to be broken." It must be a different kind of a treaty than the world has ever seen. This first difference was that there must be a strong international control.

You can see where that leads to a deadlock because nations hesitate to surrender sovereignty, because they recognize it would be necessary to surrender a bit of it.

Of course, the next issue raised by our plan was the matter of inspection. We have played a tune on that in every way we can construct English words and English sentences. We have talked of access, ingress, egress — every word you can think of — without any restriction upon absolute right of travel wherever the international authority should want to go.

Well, for a long time there was no acceptance of that view, and we are in a curious dilemma today. The Russian Government accepted that themselves with references to disarmament. They have not said one word about it yet in the Atomic Energy Commission. They have accepted the idea of a strong international control for disarmament; they have not said a word about it in the Atomic Energy Commission. They have accepted the idea of an international agency drawing its power from a treaty in the field of disarmament; they haven't yet said so in the field of atomic energy. They have likewise accepted the idea that there shall be no interference by any one with the day-to-day operations of the international body dealing with general disarmament; but they have not agreed to this idea in the field of atomic energy.

So we don't know today just exactly where Russia stands. We know what her disarmament policy is, but Russia has carefully refrained from voting or expressing any view with regard to atomic energy situation. We are hopeful that in the near future in the Security Council she will express her view.

There was a time when we were concerned about having them agree with us quickly. I think we are not so much concerned any more. We feel that we are giving Russia and the world a great benefit, and all we are asking in reply is that nobody may be able to turn a bomb around on us. And if the world doesn't want that on those terms so far as I am concerned I will call it a day. If they come back and ask for it, they may have it, so far as I am concerned, but I would strongly urge that our Government make no concessions for the purpose of inducing them to accept the terms we put forward — terms that we think are so plain and so fair.

Now, the main problem at the moment appears to be the old problem of the Security Council which was created to handle unknown problems under unknown conditions at unknown times. That situation made it important to have unanimity in the Council among the five big powers. But we quit playing with words like "unanimity" because the public doesn't understand them. We have talked about "veto." The world understands that perfectly well. We have been begged to leave it out, and we said, "No, we

will not. The man on the street knows what we mean when we say 'veto' and we won't leave the word out." That word is a symbol for the United States plan and we don't propose to abandon it.

There was a continuous attempt made on the part of very friendly nations to get Russia to agree with us, and one such attempt took the form of leaving out the words, "by veto or otherwise," in this sentence: We said, "No violator of the treaty shall escape the consequences of his act by veto or otherwise" and the effort was made to have us leave out the reference to the veto because it was thought thereby we might gain the help and agreement of the Russians. The interesting part was that the Russians accepted neither form. They didn't pay any attention to soft words. They wanted to play frankly and openly.

That leads me to tell you about the men we work with. Gromyko is an interesting citizen. He has a handicap, as does anybody else carrying out orders of his government. One thing about Gromyko, and that is that he is not soft — he is calm and calculating, he is definitive, and you know exactly where he stands — he never wavers. He isn't on this side today and on that side tomorrow. You know exactly where he is. He never trims, and he is easy to work with because you know exactly where he is. And, so far as we have found, his word is absolutely good.

Now, we would wish he had more power, but if the United Nations can convince him and the Government of Russia in turn, I believe there will be no trouble at all in working out the principles to be embodied in the treaty.

Now, why do I think so? The nations have accepted the idea of an international body with adequate powers of control. They agree on the right to inspect — that means freedom of access. They have agreed also on no veto on the day-to-day operations of the body. This international body can go along and do its everyday, normal work without interference of direction by any one nation in the body.

Now, what have we got left? The main bit of the backbone of our plan that they don't agree to at all is the veto on penalties, the penalties for violating the treaty we propose. We said here the world is sick and tired of trading promises. There must, in this case, be a police power there to detect violations, a body to determine guilt and then to bring down punishment, and no one nation may relieve itself from punishment if it violates the treaty, nor may it relieve some friend from punishment if it violates the treaty.

Now, to make that problem simple let me offer an illustration. Suppose in Scarsdale, where quite a few of us live, if we passed an ordinance that no parking was allowed on the street in front

of our fire engine houses, that would be simple, logical and ordinary practice. We might set up a very stiff fine for such parking. But if they wanted to carry it out in the plan of the Security Council, there would be a "wrinkle" in this ordinance which would provide "but any member of the village board may excuse his own violations of this ordinance with impunity, and also, he may prevent the punishment of any friend who violates the ordinance."

Well, that kind of a law won't go very far in our community, and that is a deadly parallel with the situation we are facing, if the Security Council can veto the punishment of a nation offending the treaty.

We have said, "You may have the sanctity of a treaty or the sanctity of the veto, but you can't have both," and as far as we are concerned, it is a sacred treaty going to be enforced and kept, or we are not going to waste time in talking about it.

Because of this, we are "hard-bitten" and "hard-boiled" and "arbitrary," but at least we mean business and I think we have one virtue — we never wavered one inch.

One of the first days, when the ground rules were laid down in our delegation, it was declared: "Every retreat is the start of a rout, and don't you ever dare retreat from any one of these principles outlined by top policy in our group." And I think that rugged adherence to the plan has brought support rather than an attempt to chisel into it and weaken our position.

I assume you men all know the one scientific fact that is at the root of this trouble. As I see it from a layman's point of view, if this body had one plan only, one requirement, to prevent the use of atomic energy in war, you'd keep the uranium in the ground and thorium in the beaches. But it has two jobs. One is to develop its potential for peaceful purposes and also to prevent its use in war.

Now, the difficulty is, and I can illustrate it by using my arm, that we start up here on my shoulder, with uranium and thorium located there, and down a little farther one comes to the chemical and metallurgical stages, and finally one comes down further to fissionable material ready for use. The processes are exactly the same except up to that point, but at that point this material can go to either peaceful or to war purposes, depending only upon the frame of mind of the one in control. The risks of diversion are such that there has to be control all the way along, because a man could divert it at any point toward or to war uses. That isn't generally understood or thoroughly understood, but it is that that makes the difficulty — in having two divergent objectives in one. The benefits of the use of atomic energy for peaceful purposes

must be secured; but if they are secured, there is the risk the materials will be used for war.

I am assuming you engineers are most interested in the problem of what are its prospects for its use commercially. I am going to lay aside the medical uses which have been so well described in journals, and you are all generally aware of them.

The last word I have from Charles Thomas of Monsanto and as best as I recall — I haven't refreshed my mind from reports lately — is this: That by the end of '48, there ought to be a plant of a pilot character that will show the potential fairly well. So today, it is in the design stage . . . nothing more than that. There is a lot of engineering work to be done. It is believed that they can produce power on an equivalent of under ten dollars a ton for coal. The difficulty is that they will have to get kinds of metal that will not break down in use — valves and piping — and they have to protect people from extreme radiation. The engineering is difficult and has to be done very slowly.

I couldn't attempt to appraise the probabilities of their engineering work coming out to a commercial success at the first attempt, but it seems to me there ought to be a great potential use for power in many parts of the world where it doesn't now exist.

Now, I can't think of anything special to talk about beyond the points that I have covered. I could talk for a week on the matter and not exhaust it, but if you will indicate by some questions what is on your mind, it will probably prod some memories in the back of my mind.

While you are developing your questions, I will tell you the best human interest story which I have heard. When it was quite clear that we were going to have an atomic bomb, they picked a number of the best bomber crews in the Army to go into training to drop this bomb.

The bomber coming in on the run had to drop the bomb, and at once turn about on its course — directly about — because if the bomber kept on it would be substantially over where the explosion would take place, and it might destroy the plane and kill the crew.

After some testing they finally got the time down to two minutes, but that wasn't enough, they wanted to get the turn about of the plane in one minute. And finally, they got it down to 59 seconds, and they were very well satisfied. The planes were well equipped with instruments and they probably felt that they had reached the limit of perfection.

The customary thing was that while the dropping of the bomb was indicated to the pilot on his instrument board, the bombardier always called "Bombs away!" The day they dropped the first bomb, everything of previous instruction was forgotten about.

The bomber didn't say, "Bombs away!" He said, "Get the hell out of here!" And the pilot didn't take 59 seconds to turn the plane about — he took 29 seconds. (Laughter.)

I like to tell that story to show what incentive will do for a man.

Are there any questions? There must be some here. I don't know what your interests are — whether they are the political side of it or what. There is a mass of material that you can get just as well, and even better, from books and manuals which the U. S. Delegation has issued.

A Member: Do you think we can prevent some dictator from going up into the northern part of Siberia and producing a bomb before we know about it?

Mr. Hancock: Yes, sir, if we get our treaty. If we don't get our treaty, we can't.

Now there has been a lot of material that has been written on that, but just let me tell you two things that will at least support what I have said.

If you were to go about one hundred miles from one of the separation plants, and if you were to use a Geiger-Muller Counter, you would know there was a plant producing material within some reasonable distance.

At Alamogordo where the first bomb was set off — 300 miles away from our base at Los Alamos — one year afterward, the Geiger-Muller Counter indicated a double normal activity in the area.

So, if Geiger-Muller Counters were installed in planes travelling on a gridiron pattern, the facts could be known.

Of course Russia is going to object, and she has already objected — there is no secret about this — that she is not very keen about the idea of having aerial surveys; but by taking samples of air and by measuring the radio-activity in the air, it is feasible, I think, to locate it.

Now I am ready to agree that there may be parts of the world where planes can't go, and where men might not get, and yet I am satisfied that that kind of a development, if attempted in an inaccesible part of the world, would reveal its existence as it would drain off of the nearby accessible area. They would have to take so many scientists that they alone would be missed by the international inspectors. The absence of those scientists would be marked in all scientific circles just as the absence of men in nuclear physics and in chemistry during the war was known perfectly well in professional circles.

We have a lot, I think, of very convincing evidence that it can't be done secretly, and the nation that attempts it is going to have a very, very serious difficulty, with the risk of being caught, and bringing down on that nation the collective punishment of the rest of us. Now, I can't guarantee you that, but I believe an international inspection system will give ample notice of an intended violation.

I think the mining men will tell us there are certain spots in the world today where the finding of uranium is of almost zero possibility, if not actually that. So, a nation will have to start somewhere where uranium probably is, and the geologists know today quite well where it is, and will know where to look. In addition, it's going to take quite a few big plants with tremendous power both required and produced.

MR. A. S. TUTTLE: May I ask if there is reason to believe that the Russians know the secret?

MR. HANCOCK: There is no reason that I know of; there is nothing to the contrary. The men who lived with this project during the war were asked to give us their best estimate as to what time Russia might require to produce a bomb, given the will to produce it, and given the willingness to throw in all available personnel and so on. If I remember, at the start of the work a year ago, the general estimate was around seven to ten years, and now it is somewhat greater.

I can't prove the extent of the knowledge of any other nation, but it takes more than scientific knowledge to enable a nation to make a bomb. The best judgment reports large mass production of precision machinery needed too, so the remainder of the world will not likely be able to make bombs soon.

DR. H. E. WESSMAN: Mr. Hancock, how are you going to tell the difference between a possible increase in radiation — whether that is for a peacetime use or a possible divergence for wartime use?

MR. HANCOCK: The Geiger Counter in that area will tell of the activity, and the inspectors will know where authorized plants are, and they are presumably going to be able to detect any other activity.

MR. COES: Does the treaty cover any fissionable material?

MR. HANCOCK: Yes, it will.

Mr. Albert V. Sielke: Do you think that a method of inspection could be made foolproof to prevent atomic energy from being diverted to war purposes?

Mr. Hancock: I say "Yes," except for human frailties. I can't think of any foolproof plan which would prevent bribery or which would absolutely prevent a government from violating a treaty, but I think the inspection plan should detect such a violation in time to give warning to the world.

Mr. Sielke: In view of the fact you said the energy process is the same until it comes to the fork, I thought when it comes to this branch it might be possible to so construct or use the atomic bomb so as to divert it into a wartime process in a short period of time, and then our inspectors would not be able to cope with the problem.

Mr. Hancock: We plan, however, to start inspecting up here at the mine, so if we miss a little here, we catch it here, etc. We don't plan to inspect only at the end, but at every spot in the process. Nothing is any good for war purposes until it gets up to the fork, but in the plants as the process advances toward the dangerous point, there is an increasing degree of control through international management and operation. In addition, no nation is going to start a war with only one bomb in its possession.

Mr. L. E. Peterson: Mr. Hancock, we think of uranium as the element by which atomic energy is being released. Is any other element being thought of for use in such a manner?

Mr. Hancock: Every one has been thought of, and scientists are satisfied that uranium and thorium, and the synthetic metal products produced by those two are the only ones to be used in this connection.

Dr. Molnar: I want to ask what you know about the work of the German scientists toward the end of the war — how far had they gone on toward the development of the atomic bomb?

Mr. Hancock: Well, I can't give you very accurate testimony about it. I can give you my conclusion that on the evidence so far available I have no concern about it.

PRESIDENT NEEDLES: Are the world supplies of fissionable materials fairly well charted, and under friendly control?

MR. HANCOCK: Let me break it up a bit.

I think the mining engineers would say it is pretty well known. I suppose we are always finding new mines as you find new demands for their products, but the geologists feel that they know them pretty well. They also feel that there is ample material in sight to meet the world's demand for centuries ahead, and there are some scientific aspects that indicate that if, on present thinking, we have enough for a hundred years, we will probably find that we have enough for a million years when we get through. That is the way it looks as a gambler's guess. As a matter for future speculation, I am not too sure about it, but I am not going to underwrite a power plant in a thousand years from now. (Laughter.)

MR. COES: How much of an inspection would be required for this?

MR. HANCOCK: That has not been fully developed. It is dependent on the co-operation of the nations. If you could be sure that you had a perfectly organized mining department in a friendly country with a thorough willingness to supply all the available data to help all prospectors bring in material, and find a waiting market for the product, I think your troubles will be very much limited.

On the other hand, if you felt a country was trying to oppose the inspectors, you would have to find a number of men who know every section where it might be produced.

MR. WALSH: Can you concede Russia would provide the facilities for a free and extended inspection?

MR. HANCOCK: I can provide this: They are going to agree they will if there is a treaty, and if they don't perform, there will be a violation of treaty, and that will call for punishments.

ADMIRAL HARRIS: How could you punish Russia?

MR. HANCOCK: You have all the powers of the Security Council today, if you get by the veto on punishments. You could have embargoes. You could have any kind of diplomatic pressure

you put on today. You could go as far as the world was willing to go. I don't know to what extent they will go, so I couldn't say. We haven't prescribed that yet — we have only said, "Make it as severe a penalty as you want."

ADMIRAL HARRIS: When you have different people with a different moral code, and different conceptions of life, and different definitions for simple things — that we think are simple — how can you punish them?

MR. HANCOCK: It is only a question of how far they are willing to go. You can go to war — the final way of punishing a nation. I am not saying the nations will go to war, but I don't think we ought to give a nation the moral excuse for violating its treaty — an excuse for getting out of keeping its word, the right to the veto on its own punishment.

There is another angle to the Admiral's question. I suppose all of us would like, if we could, to keep a lot of bombs on hand with which to punish any nation that violated the treaty, but I can't see that the world would consent to our keeping such bombs, because they might be afraid we wouldn't use them only for that purpose. I can't say that they will be agreeable to our having them stored here or any place else we'd like. If you started storing bombs around the world, you'd always have the risk of shifting of governmental controls, and various other risks like seizure of the property, and so on, and I don't think you can get an agreement to have bombs in being for the purpose of punishment.

All we can see is this: If you get this one kind of control working, you may set the pattern for disarmament — you may get to where the world will be anxious to set this pattern in control. If you can't, in the end the only answer is war, and there is no use trying to blur it over.

MR. WALSH: I would like to come back to the previous question. Long before you get to the question of punishment, I wanted to know if you really thought that the Russians were likely to be willing to agree to an adequate inspection with full and free access, which is against their whole system of government control.

MR. HANCOCK: Russia has agreed to inspection in the field of general disarmament, and I feel she will as to atomic energy, but as to all the nations — not Russia alone, I will believe it when I see it written, signed and ratified by all the political powers necessary for ratification, and when I see it performed in accordance therewith. In the meantime, the U. S. will give up nothing.

Mr. Ammann: Does the plan involve any obligation to give away any of the methods we have developed in making this bomb?

Mr. Hancock: Our plan has been only this: We haven't spelled out anything in detail yet. We said we will stop making bombs when we are satisfied the control is adequate so that no other nation can make one to use back on us or the rest of the world.

Now somewhere along the line we are going to have to lay down under what conditions we will stop making bombs, as to when we will stop getting materials for present stockpiles, and as to when we will give information as to each successive step. There isn't going to be any information given until the prior steps are complied with.

This authority will have to get into operation step by step, and as it gets into operation and proves itself competent, more information will be given. If the plan breaks at any step, no further information will be given.

There is a lot of dispute about whether we should not limit research work on the explosive materials to the international authority and take it from national authorities. The international authority would have to do that work, I think, in order to be abreast of anybody who might be working secretly. There is no intention of giving up anything as to the bomb itself.

You would all be interested to know, I believe, that in spite of all the pressure to give up more scientific information, we have taken the greatest care. We have had the security experts present at all meetings and certified statements from men on General Groves' staff to the effect that we have had no security leaks in our public meetings. We have a most careful briefing of all men who talk, warning them of every point of danger in the security aspects, and I have seen nobody even get near the danger line in the hundreds of meetings I have attended.

Now, I can't tell you what may happen at the University Club tomorrow, for example, if some of them got together here, or at the Union League Club Bar either, but that is outside the round of control. But I would gather from what we see of all the worming around for information that while they want it, they haven't got it or they wouldn't keep on pressing to get it now.

If any of the men here are interested in following through any aspects of this and will let me know, I'd be glad to get you publications. We have gotten great numbers for libraries and scientific societies here, and elsewhere — so I think that any question anybody can ask will be answered, maybe not quite as

sharply as you'd like to have it answered, but the material is available for anybody who wants it.

MR. GOODRICH: It is maintained by inference or otherwise that Russia is the enemy nation. Have our scientists gained enough information from the V- experiments, which I think come under your control, to warrant all the publicity given to them, or are we using it more or less as a club?

MR. HANCOCK: Well, I don't see any signs of the tests being held as a club in international negotiations. The only wisecrack I made about it was to Mr. Byrnes. I have known him for some forty-odd years and that warrants my being familiar with him. I said, "Jimmy, if you have been using atomic diplomacy abroad, you ought to have come home with more than you did come home with."

I couldn't see any sign of it being used as a club. I don't see any reason why this country should give up anything at all to anybody. As a matter of logic they shouldn't, because the first obligation of this nation and of this government is to protect national security. That, to my mind, is its top obligation. (Applause.)

I have heard a lot of scientists say in the past year, "Hancock, you are wrong. You grew up in the Navy as a youngster, and you ought to recognize you have got to have science free." And I have answered in foc'sl language, "Ah, hell, you aren't going to have science free unless you have national security first, and if you want free science and freedom of research, you will get it only if you have a free nation; otherwise, you won't get it."

There was a crowd of men very active a year ago, and determined that the only chance of world success was to have science free. I am all for it, too, secondary to national security. That may be due in part to my naval upbringing. Maybe it is a hard-bitten point of view. But it seems to me that there is always one man of the type of Hitler in the world, and the only thing in the world he seeks is power. We can talk brotherly love all we like, and we may believe in it if we like, but in the end, if a man of that type gets loose, the only thing that will stop him is power, as brutal as you like it, and I think the obligation of this country is clearly to keep the bomb until we know that it cannot be made elsewhere to be used on us or the rest of the world, and that is our simple proposition.

MR. GOODRICH: I don't think you caught the import of my question — why are we so publicizing the V-2 and shooting rockets at the moon?

MR. HANCOCK: I don't know a thing about it. I don't have a thing to say about govermental policy in that regard.

PRESIDENT NEEDLES: May I ask if, in your opinion, there is a better incentive toward world peace than mutual fear?

MR. HANCOCK: I haven't thought of it in that way. You certainly need world respect; whether it is quite in the aspect of fear or not, I don't know. I might say though that nothing else will keep the world crook in line quite like his own fear of a licking.

MR. E. B. WHITMAN: When you make these bombs, are they good after long periods of storage, or do they deteriorate? Will they be as good in five or ten years as they are in two years, or will they deteriorate some?

MR. HANCOCK: The bomb material — the explosive portion — will be good indefinitely; no degeneration at all. There are metal parts though that will deteriorate. The probability though is that the bombs will never be assembled in advance. The explosive material will be kept separate, just as you keep the powder separate in heavy ammunition.

MR. SCHEIDENHELM: Out of the depths of my ignorance I'd like to ask a question related to security which, of course, you will not answer if it does violate security. And it is this:

Is there any one man who, if he told all he knew, would have the whole secret, or does it take a chain of intellects and their knowledge?

MR. HANCOCK: I don't know. I would guess that there are about five men in this country who'd know enough to pick the men they would require to help them, but no one man or no five men could do the job by themselves. There are men, I think, who know enough to pick the kind of talents to fill in their own blind spots — who know where to go for men with industrial know-how and engineering know-how.

We have been advised to have all scientists killed, but that is not the American plan. (Laughter.)

MR. SCHEIDENHELM: That is close to saying that if any one man elected to, he could not in himself sufficiently tell the whole story.

Mr. Hancock: No. Of course the work done abroad — the basic scientific work — has been well-known for a good many years; there is nothing new about it. It has been done for many years, but nobody saw the application of it to explosives for war purposes until this war started.

Dr. Molnar: I'd like to ask two questions. One is, as I understand it, the material that will be used for peaceful purposes is the sort of denatured material of fissionable character. Is there any way this control commission could control the renaturing of this material?

The second question that I want to ask is this: Is there any political reason why Russia, in view of the fact that Molotov signed the pink paper and agreed to the principles laid down there, that they were holding out just for some political gain perhaps in the German peace treaty before agreeing on our American plan?

Mr. Hancock: The first question relates roughly, I think, to this — to the effectiveness of denaturing. The theme is advanced in the Lilienthal report last March or April, that this material could be denatured in a way that would make it incapable of producing explosive material — fissionable material, so-called. That was probably unduly emphasized.

Even non-technical men, shortly after the report came out, were saying that they never heard of a thing being denatured that couldn't be renatured — let's see if it can't be renatured. We are convinced today it would not be safe to allow large quantities of temporarily denatured material to get into the hands of any nation. Of course, if you really ever get a plan where you can truly denature the material, you could conceive a much wider industrial use for it. It is too doubtful today to accept it. Those who advocate denaturing as a possibility are hopeful, but that is the best one can say.

The second aspect of the question was whether Russia might be in a position today of withholding approval temporarily, awaiting further developments in the political situation, and particularly in the German peace treaty. I think that might be true. At the moment Russia appears to be holding the veto in the field of atomic crimes as essential to her interests, and she wants us to outlaw the bomb soon. That seems too simple to be a full explanation, but I think it is enough to explain Russia's position.

Mr. Walsh: Is it fair to say that the atomic bomb is no longer a scientific problem and is a political problem purely?

Mr. Hancock: I think the scientific aspect has passed. It will still remain, but the emphasis on the scientific aspect will go down and international, diplomatic, political — I don't know what you want to call it — that aspect will be the important one for the next year or so, when the scientific aspects will gain new emphasis.

I guess we are through, Mr. Chairman. (Rising applause.)

President Needles: The meeting stands adjourned.

(The meeting adjourned at ten-five o'clock.)

APPENDIX

Report of the Secretary, Philip W. Henry

As the activities of the Institute and obituaries of deceased members are detailed in the minutes of the monthly meetings of the Council, copies of which have been mailed to the membership, only a brief summary will be given here.

At the meeting of March 6, 1946, the Council voted to change the hour of its monthly meetings to 11.30 A.M. followed by membership luncheon at 12.30. This was in accordance with the report of a special committee composed of Messrs. Carlton S. Proctor, E. Rowland Hill and Hardy Cross.

Mr. Arthur S. Tuttle, National Councillor, Chamber of Commerce of the United States, reported that while, on recommendation of the Institute, professional organizations are now admitted to membership in the Chamber, there is no provision that they can make proposals for nominations to membership on the Board of Directors. The Secretary was requested to write the Chamber.

The Secretary submitted a statement from the National Bureau of Economic Research, Inc., to the effect that consulting engineers and certified public accountants receive larger average incomes from independent practice than other professional groups. Lawyers and physicians rank next, and dentists last.

At the meeting of April 3, 1946, the Council voted to issue to the members a questionnaire, prepared by Messrs. E. C. Johnson and Leslie G. Holleran of the Development Committee, in regard to Institute affairs.

At the meeting of May 1, 1946, the Council voted that copies of the British model forms of contract be circulated to the membership merely as information. This was on the recommendation of Mr. E. E. Howard, Chairman, Committee on Professional Practice and Ethics.

At the meeting of June 5, 1946, the Development Committee, through its vice-chairman, Mr. Leslie G. Holleran, made the following recommendations, which were adopted:

1. That the qualifications for membership be maintained at the present high level.

2. That a special committee consisting of members with a wide acquaintance with engineers throughout the country be appointed to suggest a list of consulting engineers in all sections

of the United States who might be able to meet the qualifications for membership in the Institute, and that this committee take the proper steps to bring the matter of joining the Institute to the attention of such qaulified engineers.

3. That the dues be not increased at this time, as it does not appear that expansion of activities justifying such increase is recommended by the membership.

4. That the Development Committee be authorized to consider the matter of implementing the wishes of the membership as set forth in the summary of answers to Question 5 (of questionnaire) and to make recommendations for such implementing to the Council at the October meeting.

Mr. Holleran also reported that the Development Committee recommended the following in regard to relations between the Institute and Engineers Joint Council, which recommendations we approved:

> The vigorous and increasingly important rôles being assumed by Council fully merits the strong support of the Institute. It is therefore commended that the President be authorized to inform the Chairman of the Council that the Institute desires to actively support the work Council is doing, and to suggest that the Institute be kept informed of Council activities through an Institute member who is also a member of Council or a chairman of committee. Also that the Institute be advised as to the manner in which it can assist Council in its endeavors.
>
> It is also recommended that members of the Institute who are also members of Council be informed of the Institute's desire to have a representative on Council, and that they be requested to bring such desire to the attention of Council at an opportune time should there be any tendency on the part of Council to enlarge its membership.

Mr. Holleran also recommended closer co-operation between the Institute and the Association of Consulting Engineers in London, which recommendation was adopted by the Council as follows:

> Since the aims and problems of the two organizations appear to be nearly identical, and since a knowledge of the manner in which the Association solves its problems would be of assistance to the Institute and vice versa, it is recommended that the Secretary be authorized to inform the proper officer of the Association that the Institute desires

to maintain closer relations with the Association, and offer to exchange reports and other information on such matters as Qualifications for Membership, Model Agreement, Fees for Work, Relations with Governmental Authorities, and matters of a similar character, and would be glad to receive suggestions from the Association as to how closer relations can be maintained.

At the meeting of September 11, 1946, the Secretary reported that in accordance with the direction of the Council at the meeting of June 5, the following items were sent to the members:

June 24—Report of Development Committee on Questionnaire.

July 8—Letter of Col. Proctor in regard to Mr. Farwell's letter on fees paid by the Federal Works Agency.

July 16—Report of Development Committee on closer co-operation between the Institute and Association of Consulting Engineers of London, which report was transmitted to London, June 7.

July 16—Report of Development Committee on relations between Institute and Engineers Joint Council.

The Secretary reported that in accordance with recommendation No. 2 of the Development Committee, President Needles had appointed the following committee to suggest consulting engineers eligible for membership:

Leslie G. Holleran	New York, N. Y.
H. H. Allen	Baltimore, Md.
E. B. Black	Kansas City, Mo.
Charles B. Burdick	Chicago, Ill.
Frank M. Carhart	Boston, Mass.
Frederick H. McDonald	Charleston, S. C.
Marvin C. Nichols	Fort Worth, Tex.
C. G. Spencer	New York, N. Y.
John C. Stevens	Portland, Ore.
L. J. Sverdrup	St. Louis, Mo.

The Secretary presented a letter, dated August 21, from Col. William N. Carey, Executive Secretary, American Society of Civil Engineers, enclosing statement on remedial legislation in the interest

of professional engineers, presented to the Sub-Committee of the House Labor Committee on behalf of the Society. In his letter Colonel Carey said: "It occurs to me that the American Institute of Consulting Engineers might desire to take some formal steps along similar lines or to join with ASCE in its efforts." The Council authorized President Needles and National Councillor Tuttle to prepare a communication to the Chamber of Commerce of the United States, asking the Chamber for such support as it may be able to give in this connection.

The Council, having expressed its approval, appointed a committee composed of Messrs. Arthur S. Tuttle, Irving V. A. Huie and Richard H. Tatlow, III, to co-operate with the ASCE.

After the luncheon an open discussion took place of Institute affairs and the proposed program for conservative expansion of its membership and activities. The discussion was led by President Needles and the principal matter presented was the report of Mr. E. C. Johnson, Chairman of the Development Committee, copies of which were sent to the members.

At the meeting of October 2, 1946, the Council referred to the Committee on Professional Practice and Ethics, Mr. E. E. Howard, Chairman, a letter from Admiral Bakenhus in regard to the selection of a consulting engineer. The Council approved the various recommendations by E. C. Johnson, Chairman of the Development Committee. It also approved certain amendments to the By-Laws recommended by the Committee, which were sent to the members for ballot at the annual meeting, January 13, 1947.

At the meeting of November 6, 1946, the Secretary reported that President Needles and National Councillor Tuttle had written the Chamber of Commerce of the United States in regard to co-operation between the Chamber, the Institute and the ASCE on collective bargaining between employers and professional engineers.

At the Council Meeting of December 4, 1946, the special committee, through its chairman, Arthur S. Tuttle, presented a report on co-operation with the Chamber of Commerce of the United States and the American Society of Civil Engineers, and recommended certain changes in the labor policies of the two organizations. These changes, which were approved by the Council, are as follows: To the policy of the Chamber should be added: "Professional Employees, because of their background, education, training and particular work interests are a distinct group and should be so considered." To the policy of the ASCE should be added: "Supervisory Employees are a part of management and should be so rec-

ognized." Copies of these recommended changes were ordered sent to the Chamber of Commerce of the United States, to the American Society of Civil Engineers and to Engineers Joint Council.

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Meetings of members during the year were:

January 14: Annual Meeting at the University Club, 1 West 54th Street, New York, at which the speaker was Dr. Paul G. Hoffman, President, Studebaker Corporation, and Chairman, Committee for Economic Development, whose subject was: "The Outlook for Freedom." President Hill made brief reference to the Institute activities during the year and presented a formal address on "Co-ordinated Transport in the Postwar Economy." Both of these addresses were printed in the Proceedings and copies sent to members, guests and other interested parties.

January 15: Luncheon meeting of the Council at the Engineers' Club, 32 West 40th Street, New York, at which the following officers for the ensuing year were elected: E. R. Needles, president; George S. Armstrong, vice-president; James Forgie, treasurer; Philip W. Henry, secretary.

February 6: At the luncheon of members and Council at the Engineers' Club an address on "Objectives of the National Science Foundation and the Virtues and Faults of the Various Bills before Congress for the Establishment of the Foundation" was made by Dr. Boris A. Bakhmeteff, Professor of Civil Engineering, Columbia University.

March 6: At this luncheon, Engineers' Club, members and guests enjoyed an address by Dr. W. Homer Turner on "The Future Rôle of the Engineer." A summary of the address was sent to the membership.

April 3: At this luncheon, Engineers' Club, Dr. Raymond Rodgers, Professor of Banking, New York University, edified his audience by discussing the illusive and provocative subject, "Is Inflation Inevitable?" Interest was shown in the remarks that followed by various members.

May 1: At the Engineers' Club luncheon members and guests listened to an address by Mr. Glen E. Markt, Director of Airports and Buildings for the American Air Lines, on the Idlewild Airport. The general plan of the airport was displayed showing present construction and future development. The general design principles were discussed, particularly from the standpoint of operation. The numerous questions which were asked were evidence of the great interest of those present.

June 5: At this meeting, Engineers' Club, members and guests listened with great interest to an address by Colonel William Chapin of the Triborough Bridge Authority on "Construction of New Routes in the Metropolitan Area to Relieve Traffic Congestion."

September 11: Luncheon meeting of members at the City Midday Club, 23 South William Street, New York, at which an open discussion took place of Institute affairs and the proposed program for conservative expansion of its members and activities. The discussion was led by President Needles and the remarks were taken down by a reporter and sent to the membership.

October 2: At this luncheon held at the City Midday Club, Major Irving V. A. Huie, Commissioner, Board of Water Supply, New York City, gave a brief sketch of the operations of that Board dating from the supply from the Croton River a hundred years ago to the present development from tributaries of the Delaware River.

November 6: At this luncheon at the City Midday Club there was present a record number of members and guests whose interest was deeply held by the thoughtful and well presented address of General A. G. L. McNaughton, who was Commander-in-Chief of the Canadian Forces in Europe and is now the Canadian representative on the Atomic Energy Commission.

December 4: At the City Midday Club luncheon members and guests heard an interesting address by Rear Admiral L. B. Combs, C. E. C. Director, Atlantic Division of the Navy, on the activities of the Civil Engineer Corps, Bureau of Yards and Docks, particularly in reference to the methods of preserving the hulls and machinery of vessels which are now being laid up, but which may be needed at some time in the future.

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As to Institute representatives, Mr. Arthur S. Tuttle was reappointed to represent the Institute on the Chamber of Commerce of the United States as National Councillor with Col. R. H. Tatlow, III, as Substitute. Mr. George C. Diehl was reappointed to represent the Institute on the Highway Research Board with Mr. Charles E. DeLeuw, Alternate. Mr. Ernest C. Johnson was appointed to represent the Institute on Sectional Committee C-42, American Institute of Electrical Engineers on "Definitions of Electrical Terms."

Membership

In 1946 eight new members were elected: Messrs. R. N. Bergendoff, Kansas City; John C. Stevens, Portland, Ore.; Malcolm Elliott, St. Louis; Hans Kramer, San Francisco; Clinton D. Hanover, Dean G. Edwards, Edward H. Anson and Theodore T. Knappen, New York. There was one resignation, namely, Manuel Font of Puerto Rico.

During 1946 we had three deaths: Colonel Henry G. Perring, Baltimore; Clyde R. Place, New York, and A. C. Polk, Birmingham. Our membership on December 1, 1946, was 133.

Henry Garfield Perring, a member of the Institute since 1930, was born in Philadelphia, April 25, 1881. He was educated at Drexel University and married Catherine Jenkinson. His widow and son, Henry Brooks Perring, both survive him. He was the son of Henry Crew and Annie Franklin Allen Perring. At the time of his death on January 25, 1946, he was Harbor Engineer for the City of Baltimore. After holding various engineering positions from 1898 to 1905, he became Chief Engineer of the Keystone Fireproofing Company of Philadelphia. He then filled positions in several engineering and contracting firms, and in 1911 he opened an office in Baltimore as a consulting engineer, which he maintained until 1920. From 1920 to 1928 he was Chief Engineer of Baltimore and Supervising Engineer for the Public Improvement Commission. In 1928 he formed the firm of Perring and Remington

and acted as engineering counsel in important law cases and as arbitrator in many engineering matters in which large sums were involved. He was a member of a number of engineering and architectural societies as well as those of a social nature. He was a Colonel in the Quartermaster's Reserve, U. S. Army, and Past President of the St. Andrews Society of Baltimore. At the Society's annual banquet he recited Burns' "Ode to the Haggis," when this traditional Scotch dish was carried to the banquet room with great ceremony. He was fond of swimming, bowling and horseback riding, and enjoyed his flower gardens. He took much interest in the American Institute of Consulting Engineers and while serving on the Council he obtained Dr. William Wistar Comfort, President of Haverford College, to present the "Cultural Advantages of the Study of Latin," while Dr. William Otis Hotchkiss, President of the Rensselaer Polytechnic Institute, presented "The Cultural Advantages of the Study of Engineering" at the annual dinner, January 15, 1940.

Armour Cantrell Polk was born in Little Rock, Ark., September 12, 1879, and died March 1, 1946. At the time of his death he was a member of the engineering firm of Polk, Powell and Hendon of Birmingham, Ala. He was also vice-president of the American Society of Civil Engineers. After his graduation as C.E. at the Rensselaer Polytechnic Institute in 1903, he was employed by the Pennsylvania Railroad on the tunnels under the East River. For the next eighteen years he was with Sanderson and Porter in various engineering projects in the South, Middle West, New York State and West Virginia.

In 1923 he was made president of the Dixie Construction Company and moved to Birmingham, where he had charge of all construction for the several state-wide utility companies under the Southeastern Light and Power Co. Later, as vice-president of the Allied Engineers, Inc., he had charge of engineering and construction of utilities in six southern states. In 1931 Mr. Polk established himself in Birmingham as a consulting engineer, and his practice gradually embraced the southern states. In 1936-37 he was retained by the City of Birmingham to design and construct a $6,000,000 supply of industrial water. Since 1943, when the partnership above noted was formed, it has had many important engagements.

Mr. Polk, who was a Colonel in the Reserve Corps of Engineers, was an active member of many engineering societies, as well as of non-technical organizations. He was a great sportsman, and his duck hunts of November and December became high-points in each year. He was a golfer and an ardent fisherman. He was president of the Birmingham Skeet Club, where he frequently

broke fifty out of fifty pigeons. Since his death the name has been changed to the Armour C. Polk Skeet Club. He had the leader's knack of selecting able men, of delegating authority, and of backing his men to the limit. He loved the beautiful and lovely home which he and his wife—who survives him— built on a mountainside in the suburbs of Birmingham. He became a member of the American Institute of Consulting Engineers in 1942.

Clyde R. Place was born at Mount Upton, N. Y., September 18, 1877. He was graduated at Massachusetts Institute of Technology in 1902 with a B.S. in Engineering. Shortly after coming to New York City he was placed in charge of all the mechanical, electrical, sanitary and heating systems of the Grand Central Terminal improvements. His later work included the mechanical and electrical works for many notable structures, such as Rockefeller Center, National Gallery of Art, National Archives Building, Remington Arms Plant at Bridgeport, Allegheny General Hospital, Waldorf-Astoria Hotel, British Museum of London and Peking University. In 1941 he became associated with Elwyn E. Seelye, Antonin Raymond and Arthur S. Tuttle in a joint venture for the purpose of combining all varieties of engineering and architectural talent for service in the design and construction of projects relevant to the war. Mr. Place had charge of all the mechanical and electrical engineering work relating to Camp Kilmer and Camp Shanks Staging areas, notable improvements at Fort Dix, Army Freight Depot at Bound Brook and a large number of Naval Training Stations. Mr. Place was an active member of many engineering societies, as well as of many non-technical organizations and social clubs. At the time of his death he was serving on the Council of the American Institute of Consulting Engineers. He was prominent in the Boy Scout movement, and never lost the human touch with those he met in every-day life. Mr. Place's death on March 26, 1946, was a definite loss to the engineering profession. He is survived by his wife, two daughters and a son.